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NTS Area 64D

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Metallogenic Notes

Mineralization in the Reindeer Lake (South), NTS area 64D comprises:

1. Sediment-hosted Zn, Pb, Cu, Mo and Fe sulphides, mainly in the La Ronge and Glennie Domains.
2. Silver in the La Ronge and Rottenstone Domains.
3. Gold in quartz-carbonate vein stockworks and quartz-veined shear zones, found mainly in metavolcanics of the La Ronge Domain.
4. Uranium mineralization in granite pegmatite dykes in the La Ronge Domain.
5. Copper in small gabbro and pyroxenite plutons in the La Ronge Domain.
6. Miscellaneous mineralization: asbestos in ultrabasic plutons, graphite in pelitic gneisses, beryl in granite pegmatite dykes, crystalline hematite ("Alaskan Black Diamond") in granite pegmatite, and titanium values in magnetite.

1. Sediment-hosted Mineralization

Zn Sub-type

Numerous low grade showings of sphalerite with pyrite and pyrrhotite are present in the La Ronge and Glennie Lake Domains. They occur in a variety of rock types including metasedimentary gneisses, mafic to felsic metavolcanic rocks, and mafic to felsic intrusions.

Higher grade sphalerite-chalcopyrite mineralization occurs in the MacKenzie deposit (SMDI No. 446), located on the historic Peg claims, 1.2 km northeast of the north end of Brabant Lake. Mineralization, hosted mainly by fractured granite pegmatite, forms a conformable layer, about 3 to 6 m wide, within a metasedimentary biotite gneiss sequence (111) which occurs in an open synformal fold, plunging 35° to 40° north-northwest . The fractured, mineralized pegmatite is green in contrast to the pink unmineralized rock, and contains sphalerite, chalcopyrite, pyrite and pyrrhotite as disseminated interstitial grains partly replacing silicate minerals, and as veinlets in the more fractured portions of the pegmatite. The local control of sulphide mineral deposition appears to be structural, generally occurring in sheared and highly fractured portions of the pegmatite. Total drill indicated reserves are 3 930 000 t with 4.32% Zn, 0.64% Cu, 4.75 g/t Ag and a trace of gold. The deposit may represent material derived from the sediments and remobilized during regional metamorphism.

Mineralization on the historic Betty claims to the northeast probably extends from the MacKenzie deposit as it is associated principally with fractured pegmatite (SMDI No. 414), which is conformable within the sequence of biotitic gneisses (111). Assays of Betty Group mineralization give trace Au, Pb, Ni, 0.16 to 0.57% Cu, 0.68 to 1.10% Zn and 5.30 to 8.0 g/t Ag.

A recent (1989) economic study by MPH Consulting Ltd. concluded that at least 3.4 million tonnes of high grade material (8% Zn) would be needed to justify mining the MacKenzie deposit (134).

Pb Sub-type

Vein-type lead showings assaying up to 17 g/t silver occur southeast of Henry Lake, on prominent northerly to north-northwest-trending lineaments related to the Tabbernor Fault (SMDI No. 476b, 483).

Cu Sub-type

Chalcopyrite, commonly associated with pyrite and pyrrhotite, occurs in weakly mineralized lenses in psammitic to hornblendic gneisses and mafic to felsic metavolcanics. Disseminated chalcopyrite occurs in dykes of gabbro, quartz diorite, and diabase that intrude the supracrustal rocks. Most showings are within the La Ronge Domain. Two occurrences of chalcopyrite are in brecciated and mylonitized fracture zones related to the Tabbernor fault system (SMDI No. 488a).

The Churchill Minerals deposit, east of Lower Nistoassini Lake, occurs in a conformable shear zone marked by sericite-chlorite schists (SMDI No. 459), bounded by meta-andesites intruded by quartz diorite. Assays yield from 0.1 to 4.72% Cu, 0.2 to 2.6% Zn, 0.3 to 10.2 g/t Au, and 5.8 to 17.0 g/t Ag. The zone has been proven over a length of 245 m, a width of 43 m, and to an average depth of 122 m. Pyrite and pyrrhotite form disseminations and massive replacements within the host sericite-chlorite schist, with chalcopyrite, sphalerite and gold locally developed in the more strongly deformed, central sections of the zone.

Mo Sub-type

Molybdenite is present in mafic to ultramafic rock, highly granitized calcareous gneiss, massive granodiorite, and hornblende-plagioclase gneiss. Assays of trace amounts to 2.72% MoS_2 are recorded from the five different deposits which are located in the La Ronge Domain (SMDI Nos. 482, 492, 497, 498 and 525).

Fe Sulphide Sub-type

Most pyrite-pyrrhotite zones are barren, except for local traces of chalcopyrite, sphalerite, and graphite. Pyrite-pyrrhotite mineralization occurs in two modes, as variable widths of massive replacement, and as fine disseminations in narrow bands of metasedimentary rock. The latter is probably of syngenetic origin.

Iron formation at Wedge Lake is of mixed sulphide, oxide and silicate facies. Boundaries between facies are not discrete; however, generally on undisturbed fold limbs the iron formation consists predominantly of carbon-rich sulphide facies, whereas in the vicinity of fold hinges, a mixture of sulphide, oxide and silicate facies prevails. The mixed facies section contains at least five percent carbonate (122).

2. Silver in the La Ronge and Rottenstone Domains

In the Alligator Lake area, pyrrhotite-pyrite-chalcopyrite-arsenopyrite mineralization, with associated silver values of 5.5 to 10.2 g/t, occurs in felsic to intermediate tuffs, close to a gabbro (SMDI No. 450). Southeast of Henry Lake, one galena sample yielding 17 g/t of silver was taken near a lineament marking a splay of the Tabbernor Fault (SMDI No. 476b). At Wapus Lake, an assay of approximately 11.0 g/t of silver was obtained from a sample of red granite containing a disseminated black mineral. The granite cuts a granite pegmatite, which hosts fracture controlled copper (native copper, bornite and chalcopyrite) mineralization (SMDI No. 491). Low silver values of less than 7.0 g/t in the Perry Lake area accompany stratabound pyrrhotite-pyrite-graphite-chalcopyrite mineralization (SMDI No. 528, 529, 530).

3. Gold in Quartz-carbonate Vein Stockworks and Quartz-veined Shear Zones, Waddy Lake Area

General Geology

The Waddy Lake area lies within the Central Metavolcanic Belt of the La Ronge Domain and comprises ultramafic to felsic metavolcanic and metavolcaniclastic, and metasedimentary rocks. The metasediments are represented by psammitic to pelitic 'metagreywackes', minor calc-silicates, mixed sulphide, oxide and silicate facies iron formation, argillite, and varied amphibolitic rocks. These supracrustals are intruded by a variety of plutons ranging from granitic to gabbroic composition (78)(122). The volcanics exhibit mildly tholeiitic to calc-alkaline character and are interlayered with sediments.

Gold typically occurs in quartz vein systems within shear zones. Deposits, present in both supracrustals and intrusives, commonly show a close spatial association with intrusive bodies of diorite-granodiorite composition and, in some cases at least, quartz-filled fractures may be related to marginal thrusting associated with the emplacement of the plutons. The Wedge Lake 'Twin Zone', which is hosted by iron formation, is an exception.

Gold occurs in quartz-veins, -boudins, -stringers and as fracture coatings. Most auriferous quartz is glassy, semi-transparent, fine grained and massive. Nonmetallic minerals associated with the gold-bearing quartz include amphibole, biotite, black tourmaline, pink or white carbonates, feldspar and epidote. The auriferous quartz in general contains less than 0.5 percent sulphides, predominantly pyrite. Other sulphides, listed here in decreasing order of abundance, are chalcopyrite, sphalerite, galena, pyrrhotite and molybdenite. Pyrite also tends to be concentrated in wall rocks and inclusions within the veins rather than vein quartz itself. Much of the gold appears to be free, but the "colours" are very minute and too small to collect by hand from a gold pan concentrate. Some sulphide concentrate yields "colours" after roasting, indicating that gold is also locked in the sulphides (107).

Traditional prospecting procedures in conjunction with conventional B-horizon soil geochemistry were instrumental in the Twin Zone and Weedy Lake discoveries. Tower Lake (NTS 74A01), a prospecting discovery partially defined by drill programs, was also defined by B-horizon soil sampling (122).

Oven Lake - Clear Lake - Corner Lake Shear Zone

An east-northeast-trending shear zone with highly fractured quartz veins containing low gold values extends through Oven Lake (SMDI No. 427a), Clear (SMDI No. 427c) and Corner Lakes (SMDI No. 427d). This zone, which can be extended to the Pipe (SMDI No. 426) and Wee[illegible]ake occurrences (SMDI No. 423) is probably a spl[illegible] the Byers Fault zone, which is mineralized with gold at Tower Lake in the adjoining map sheet to the west (154). Mineralization is found in narrow shear zones and quartz veins in mafic to dacitic to andesitic volcanics, granodiorite, and quartz diorite. The Earl zone (SMDI No. 427b), which contains minor disseminated galena and provided one sample with 305.3 g/t silver and 0.682 g/t gold, may be close to a fracture parallel to the Byers Fault.

Komis Deposit (SMDI No. 425a) and EP Zone (SMDI No. 425b)

The property is marked by a series of quartz veins, hosted largely by andesitic metavolcanics. The metavolcanics, which also include mafic and felsic units, are intruded by a small late-tectonic, variably porphyritic, granodiorite to leucogranite body, the Round Lake Stock.

The Komis deposit (SMDI 425a) occurs on the northeastern margin of the Round Lake Stock, approximately 400 m east of Round Lake. Easterly-trending apophyses of the granodiorite and aplite dykes intrude the meta-andesites. Gold is present within the 10 to 30 m wide swarms of closely-spaced, northerly-trending, steeply easterly-dipping, quartz veins that give rise to three mineralized zones. Pyrite typically occurs as euhedral grains in alteration haloes surrounding the quartz veins, particularly in meta-andesitic wall rocks. Alteration is essentially pervasive within the main mineralized zones.

The deposit contains two types of mineralization, i.e. andesite-related and granodiorite-related. Andesite-type

mineralization occurs in semi-conformable, steeply north-easterly-dipping, assay-defined zones. The granodiorite-type consists of steeply dipping, ladder-like quartz veins, forming easterly-trending, assay-defined zones within granodiorite dykes and is more proximal to the Round Lake Stock. Mineralization has been related to diapiric emplacement of the stock with resultant fracturing and subsequent hydrothermal activity. Ore reserves consist of 1.46 million tonnes to a depth of 180 m with a grade of 5 g/t gold (uncut) or 3.8 g/t gold (cut). Projection to a depth of 400 m suggests a potential of 3 million tonnes, grading 5 g/t (uncut) (78).

The EP zone (SMDI No. 425b), the source of an auriferous till, lies approximately 300 m northeast of the Komis deposit. The zone does not outcrop, but drilling indicates it trends north-northwest, and dips approximately 20^{0} east. It comprises a 3 to 7 m wide zone of shearing and quartz veining that flanks an intermediate dyke in the host meta-andesites. Within the zone, chlorite-carbonate rocks carry native copper, pyrite, galena and gold; quartz veins are also mineralized with gold. The EP zone contains an estimated 250 000 t at 5 to 7 g/t gold (5).

Weedy Lake (SMDI No. 423a)

The area is underlain by metavolcanics that are predominantly andesitic, but range from komatiitic to rhyodacitic. Minor metasediments and metavolcaniclastics are intercalated and all are intruded by small bodies of diorite to gabbro.

The 'A' zone, approximately 750 m west of the north end of Weedy Lake, occurs in and near the north end of a small body of quartz diorite. Several easterly-trending quartz veins, up to 7.6 m wide, occur within complex shear systems. The sheared diorite has been transformed to a biotite schist containing accessory pyrite, calcite and quartz-carbonate veins. Gold values are found in both the quartz veins and altered wall rocks, but are characteristically low (17, 78, 122).

The 'B' zone, immediately northwest of Weedy Lake, occurs mainly within a variably sheared and recrystallized hornblende diorite body. Gold mineralization is contained within a silicified alteration zone, characterized by sericitization, chloritization, introduction of carbonate, replacement of magnetite by pyrite, and quartz-carbonate veins and stringers. The zone is northeasterly-trending and parallels the Byers Fault to the north. The 'C' zone, approximately 30 m north of the B zone, comprises a sub-parallel, narrow northeast-trending zone of quartz veining and shearing hosted by volcanic rocks. Other mineralized shear structures are present in the nearby area.

The 'B' zone has drill-indicated reserves of 900 000 t containing 4 g/t gold to a depth of 100 m, but is open at depth along a gentle northeast plunge direction. The main mineralized zone is surrounded by approximately 3.7 million tonnes of material grading 1.9 g/t gold (40). In the 'C' zone, gold-bearing quartz veins are more confined than in the 'B' zone but are much higher in grade.

Drilling is continuing on the Golden Heart deposit adjacent to the 'B' zone, where drill holes have intersected high-grade gold values across considerable widths (133). Exploration has outlined a high grade gold zone with a down plunge length of about 300 m, a strike length of about 150 m, and a true thickness ranging from 3 to 15 m. Tonnage and grade figures have not been released at this time (40, 78).

Wedge Lake (SMDI No. 453)

Gold-bearing quartz veins were trenched in the early fifties. Sampling returned variable gold values along the discontinuous veins. Better values were found in trench 6, however, further investigation has been deferred (122). Insufficient data precludes calculation of reserves. Mapping showed the Wedge deposits to lie within a rhyolite tuff bounded by iron formation to the south and intermediate volcanics to the north (78).

Twin Lakes Zone (SMDI No. 2065)

The Twin Lakes zone is located approximately 457 m east of the original Wedge showings. Drilling established two westerly-plunging mineralized zones, totalling greater than 600 000 t grading 5.1 g/t of gold (40) to a depth of 75 m (78). Sulphide-carbonate-oxide facies iron formations form two laterally extensive horizons, the Twin zones, within felsic volcanic rocks. The occurrences lie close to the southwestern margin of the Nistoassini granodiorite batholith. The gold, believed to be of primary exhalative origin, may have precipitated with arsenopyrite. The host iron formation is complexly folded and probably faulted, hence giving the impression of two formations (122, p.248).

Discussion

The Byers Fault and related east-west to northeast-southwest splays have been an important control for chlorite-carbonate-native gold-pyrite-quartz mineralization from Weedy Lake to Partington Lake, a distance of 40 km. The Wedge Lake property, although having occurrences similar to the Weedy and Tower Lakes areas, has the important iron-formation-hosted Twin Lakes gold zone which best fits a volcanogenic exhalative model.

Fox and Johnston (52) made the following recommendations for gold and nickel exploration, based on their study of a semi-continuous belt of Aphebian magnesian extrusive and related subvolcanic rocks between Waddy Lake and the Agassiz mine near Lynn Lake.

(1) Boninitic rocks cannot be considered suitable hosts for economic accumulations of either mantle-derived sulphides or assimilation-induced nickel-sulphide mineralization. The opposite, however, is true of komatiites.

(2) Lake sediment nickel geochemistry should be used in assigning of exploration schedules. This can be followed by basal till geochemistry and

lithogeochemistry in drift-covered areas, particularly where formational geophysical conductors are present. The Agassiz deposit at Lynn Lake occurs along a formational conductor.

(3) The central La Ronge Domain has good gold potential because of the abundance of ultramafic rocks.

4. Uranium Mineralization in Pegmatite Dykes

Two known mineralized dykes are located in the La Ronge Domain. The Horn showing at Bleasdell Lake (SMDI No. 500a) was exposed by trenching over a 310 m length. The 3.1 m wide zone has a grade of 0.075% U_3O_8. Uraninite crystals are chiefly associated with biotite, which occurs as segregations in pegmatite.

In the Ghana Lake area, grab samples from a radioactive pegmatite dyke within granitoid gneiss, assayed 1.9% and 0.37% U_3O_8 (SMDI No. 520).

5. Copper Mineralization in Small Gabbro and Pyroxenite Plutons in the La Ronge Domain

In the Fleming Lake area, small bodies of metapyroxenite and metagabbro, that intrude metavolcanics and metasediments, contain finely disseminated chalcopyrite and pyrrhotite (SMDI Nos. 455, 456, 457). Southwest of Eyaapo Lake minor chalcopyrite and pyrrhotite occur in metagabbro which cuts biotite gneiss (SMDI No. 415). On Reindeer Lake at Milton Island (SMDI No. 506) and Butler Island (SMDI No. 507), small amounts of chalcopyrite are disseminated in quartz diorite and adjacent schists. Chalcopyrite occurs in fractures in a large diabase sill in the Oliver Lake area (SMDI No. 524).

6. Miscellaneous Mineralization

Asbestos in Ultrabasic Plutons

At Lawrence Point on Reindeer Lake, cross-fibre asbestos forms an anastomosing series of veinlets that reach 0.75 cm in width and comprise up to 20 percent of the host peridotite (SMDI NO. 508). Similar showings occur on the west side of Lawrence Bay (SMDI No. 509) and southwest of Macoun Lake (SMDI No. 463).

Beryl in Pegmatite Dykes

Beryliferous pegmatite dykes occur north of Gladman Lake (SMDI No. 488b) and near Bleasdell Lake. The latter is accompanied by apatite and yellow uranium stain (SMDI No. 500b).

Crystalline Hematite ("Alaskan Black Diamond")

On Wapus Bay, Reindeer Lake, a granite pegmatite dyke contains crystalline hematite (Alaskan Black Diamond) (SMDI No. 496).

Titanium Content in Magnetite

In the Sucker Lake area, one intersection of 0.06 m in pegmatite containing 30 percent magnetite gave 4.05% Ti (SMDI No. 433a).

Graphite in Pelitic Gneisses

North of Pollon Lake, west of Deep Bay, wide graphitic bands occur in pelitic gneiss, with lesser amounts of graphite in associated garnet-biotite gneiss, quartzite, pegmatite and pyrite-pyrrhotite-chalcopyrite mineralization (104).

Graphite content is estimated to be 10.3 percent. The richest sections, over 60 percent graphite, consist of graphite in a white, sugary-textured, feldspathic matrix containing only traces of pyrite and pyrrhotite. The graphite is largely in continuous and ramifying layers up to 3 mm thick. In places the graphite layers are discontinuous and perhaps even broken. In others they outline minute folds; along the hinge lines of these folds, the graphitic plates are thicker.

The attitude of the mineralized zone is approximately 050° with 55° to 70° dip to the northwest (SMDI No. 480). The dimensions of a proposed open pit are 430 m by 76 m. Open pit reserves are estimated to be 1.6 million tonnes grading 10.3% C to a depth of 60 m (No. 191, SMDI No. 480, 481). Tests by the Ontario Research Foundation indicate that the material is amenable to milling and that a graphite recovery of over 80 percent may be achieved.

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Mineral Occurrences

The abbreviations of mineral names used in this table are those standardized by the Geological Survey of Canada, with additions where necessary.

ap - apatite
asb - asbestos
asp - arsenopyrite
be - beryl
bo - bornite
ca - calcite
cct - chalcocite
cp - chalcopyrite
gah - gahnite
gn - galena
gf - graphite
hem - hematite
ma - marcasite
mag - magnetite
mo - molybdenite
po - pyrrhotite
py - pyrite
sp - sphalerite
uph - uranophane
ur - uraninite

SMDI No.	*Elements Present*	*Name of Occurrence/ General Location*	*NTS 64D-*	*Minerals Present*	*Host Rock/ Structures and Remarks*	*Reference Numbers*
414	Zn (Cu, Ag, Fe)	Betty Group, east of Redhill Lake	04	sp, cp, mag, Ag	series of paragneisses: biotite, biotite-hornblende, and calc-silicate gneiss, interlayered with pegmatite	27, 99, 110, 155, 171
415	Fe (Cu)	Eyaapo Lake	09	po, py, cp	breccia in biotite-quartz gneiss	29, 71, 73
416	Cu	west of Pistol Lake	02	cp, py	quartz-feldspar-biotite-garnet gneiss; nose and limbs of antiform	4, 185, 186, 188
417	Fe (C)	2000 m west of McInnis Lake	02	py, po, gf	Kisseynew gneisses	6, 185
418	Au	7 km east of north end of Sucker Lake	03	assay: Au	cordierite-sillimanite-garnet-biotite gneiss	6, 94
419	Cu (Ag, Zn, Au, Fe)	8 km south of Devil Rapids on Reindeer River	03	cp, py, po, sp, assay: Ag, Au	quartz-garnet-hornblende-biotite gneiss; chloritic schist, calcareous gneiss	2, 21, 106, 142, 156
420	Fe (Cu, Zn)	Keno prospect, 2.5 km west of Reindeer River	03	py, cp, sp	biotite-rich metasediments, with barren sulphide zones	2, 106
421	Zn (Cu, Ag, Au, Fe)	Linda Claim Group, 5.3 km south of Devil Rapids, Reindeer River	03	sp, cp, py, po	biotite gneiss with pegmatite, disseminated sulphides	2, 17, 149
422	Au (Cu)	Frost No. 9 Claim (V. G. Group) east bay, Lower Waddy Lake	04	Au, cp	gold in fractures, adjacent to quartz veins	17, 23, 40, 41, 96, 199
423a	Au	Weedy Lake, "A" zone, 750 m west of north end of Weedy Lake	04	Au, py	quartz stringers in and adjacent to a small body of quartz diorite	17, 23, 35, 40, 41, 96, 122 130, 131, 132, 133
423b	Au (Fe, Cu)	"B" zone lies along shear parallel to east margin of quartz diorite body, 168 m northwest of Weedy Lake	04	Au, py, po, cp	quartz veins, banded tuff, pyritic halo with hydrothermal alteration	17, 23, 35, 96, 122, 130
423c	Au	"C" zone is 99 m northwest of the "B" zone and parallel to it	04	Au, py	associated with shear zones and quartz veining	17, 23, 35, 96, 122

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
424	Au (Fe)	Waddy Claims, at northern end of Waddy Lake	04	Au, py	quartz veins in volcanic rocks and diorite	17, 33, 96, 122, 130, 131, 132, 133, 196
425a	Au (Fe, Ag, Zn, Pb, W?, Co)	Komis deposit, 4 km west-northwest of narrows in Waddy Lake	04	Au, py, Ag, cp, mo, sp, gn	quartz veins, with pyritic halo on contact between dacite and andesite	23, 40, 41, 99, 102, 111, 122, 130, 131, 132, 137, 195, 196, 198
425b	Au (Fe, Cu, Pb)	EP zone, 457 m northeast of Komis deposit	04	Au, native cu, py, gn	within andesites, chloritized and carbonated fault/shear adjoining a dyke	23, 40, 41, 99, 102, 111, 130, 131, 136, 195, 196, 198
426	Au	Pipe showing, 1 km northeast of narrows in Waddy Lake	04	Au, ca	quartz veins in carbonatized zone 90 m south of fault in andesite	13, 40, 96
427a	Au (Fe, Ag, Pb, Cu)	Oven Lake showing, northwest corner of Oven Lake	04	Au, py	fractured quartz in 080° shear in andesite	13, 14, 15
427b	Ag (Au, Pb, Cu)	Earle Lake; 320 m southwest of west end of Earle Lake	04	Ag, Au, gn, cp	quartz stringer zone in silicified felsic volcanic rocks	13, 14, 15, 78, 79
427c	Au	Clear Lake; less than 0.8 km south-west of Oven Lake	04	Au	small shear in andesite with some silicification and brecciation	13, 14, 15
427d	Au (Fe)	200 m west of Corner Lake	04	Au, py	massive quartz bodies in small granodiorite stock	13, 14, 15
428	Cu (C, Fe, Pb)	between Main Lake and southwest arm of Brabant Lake	04	cp, po, py, gf, gn?	migmatite and pegmatite	172
429	Cu (Fe, C, Zn)	Tap (Tar) Group east shore McIver Channel, Brabant Lake	04	cp, py, gf, sp, mag	hornblende and calc-silicate gneisses	16, 109, 111, 135, 193
430	Cu (Fe)	Max 47 claim, Brabant Bay	04	cp, po, py	garnetiferous quartz-feldspar-biotite (chlorite) paragneiss	24
431	Cu (Fe)	Wierzycki Lake - Chartier River	04	cp, po	quartz vein in shear zone in hornblendic rocks	111, 192, 193
432	Cu (Fe)	Wierzycki Lake	04	cp, po, py	siliceous, pyroxene-bearing layer in hornblende gneiss	111, 192
433a	Ti (Fe)	south end of Sucker Lake	04	mag, assay: Ti	quartz-feldspar-biotite gneiss, pegmatite. Magnetite contained 4.05% Ti	6, 10, 13, 14, 15, 27, 72, 90, 139, 144, 200
433b	Ni, Fe, Cu	northwest shore of Burnt Lake	04	po, cp, assay: Ni	quartz-hornblende gneiss	6, 10, 13, 14, 15, 27, 72, 90, 139, 144, 200
433c	Cu	north end of Large Lake 1.6 km east of Sucker Lake	04	cp	pegmatite in quartz-feldspar-biotite gneiss	6, 10, 13, 14, 15, 27, 72, 90, 139, 144, 200
434	Cu	southeast shore, Contact Lake	04	cp	adjacent to a fault	99

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
435	Cu (Fe)	near creek, both north and south of Lake 22	04	cp, po, py	in calc-silicate gneisses and basic volcanics	99
436	Cu (Fe)	at Brabant Lake, north of Yaworski Island	04	cp, po	schistose rocks	99
437	Cu (Au)	4 km north of Lower Waddy Lake, at east end of South Lake	04	cp	hornblende schist and gneiss	6, 7, 10, 13, 94
438	C	north of Lake 19 (Algae L.)	04	gf	Kisseynew garnet-biotite gneisses	99
439	Ni (Fe, Zn, Cu)	Lower Waddy Lake	04	sp, cp, mag, assay: Ni	10-50% po; 5-10% py in up to 60 cm bands in garnetiferous quartz-biotite-hornblende gneiss: 5-20% mag in up to 60 cm bands in peridotite and serpentinite	55
440	Fe (C)	southwest of south end of McIvor Channel, Brabant Lake	04	po, gf	hornblende and calc-silicate gneisses	111
441	Fe	west shore of McIvor Channel, Brabant Lake	04	po, py	hornblende and hornblende-diopside gneisses	109, 111
442	Fe	near southwest shore of Lindsay Lake	04	py, po	conformable siliceous-looking layers in hornblende gneiss	111
443	Fe (Cu, C)	large peninsula between Brabant Bay and McIver Channel	04	po, cp, gf	hornblende diopside gneisses, biotite gneiss	109
444	Fe (C)	Min Group, Brabant Bay - west shore	04	po, py, gf	in a rusty layer in biotite-garnet, hornblende and calc-silicate gneisses	140, 109
445	Fe, C	Lake 17, Teardrop Lake	04	po, gf	sills and small bodies of gabbro, chlorite-biotite-garnet-feldspar-graphite gneiss	38, 99
446	Zn (Cu, Ag, Au, Pb, Ni, Sb, Se, Fe, C)	MacKenzie Deposit (Peg claims)	04	sp, cp, gn, py, gah, gf, assay: Ag, Au	fractured green pegmatite, in garnet-biotite gneiss and calc-silicate gneiss	17, 18, 20, 94, 99, 102, 111, 199, 201
447	Zn (Fe, Cu Ag, Au)	Wep Group, north bank of creek, 0.8 km northeast of Main Lake	04	sp, py, cp, assay: Ag, Au	green pegmatite with thin layers of silicified biotite gneiss	17, 18, 102, 111, 172
448	Zn (Fe, Cu, Ni)	south of South Twin Lake	04	sp, po, assay: Ni	quartz-biotite-garnet-hornblende gneiss, metagreywacke, quartzites and calcareous gneiss	61, 97
449	Zn (Cu, Fe, Au, Ni)	Lower Nistoassini Lake	04	sp, cp, po, py, mag, assay: Au	siliceous andesitic to dacitic volcanics, feldspar porphyry, quartz-biotite gneiss	59, 92, 93, 119

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
450	Ag (Fe, As, Zn, Cu, Co, Ni)	Alligator Lake, 6 km southwest of Key Lake	05	Assays: Ag, Zn, Cu, Co, Ni, po, py, cp, asp	acidic to andesitic metavolcanics, tuffs and metasediments	170
451	Zn (Cu, Fe)	Fleming Lake, west shore	05	sp, cp, py, po	basic to intermediate tuff, hornblende paragneiss	7, 9, 13, 14, 45, 46, 100, 169
452	Au (Fe, As, Cu)	Greenhill Lake	05	Au, py, asp, cp	quartz veins in granodiorite and metavolcanics	7, 8, 10, 13, 14, 15, 17, 23, 34, 43
453	Au (Fe, Zn, Ni, Pb, Cu)	Wedge Lake, Mincor Concession	05	Au, po, py, gn, assay: Ni, Pb	quartz veins intruding acid and basic tuffs	49, 119, 133
454a	Cu (Fe)	3.2 km east of May Lake	05	cp, py, mag	gabbro in granitic rocks	42, 62, 69, 100, 147, 152
454b	Cu (Fe)	1.2 km south of No. 454a	05	cp, py, po, assay: Au, Ag	amphibolite, biotite schist, andesite	42, 62, 69, 100, 147, 152
455	Cu	South Fleming Lake, island	05	cp, po	basic and ultrabasic rocks	42, 62, 100, 147, 152
456	Cu	most northerly test pit, west of Fleming Lake	05	cp	basic and ultrabasic rocks	42, 62, 100, 147, 152
457	Cu	test pits near north shore, Fleming Lake	05	cp	basic and ultrabasic rocks	42, 62, 100, 147, 152
458a	Cu (Zn, Au, Fe)	east of May Lake	05	cp, sp, py, assay: Au	narrow quartz-sulphide zone in metasediments	7, 70, 100
458b	Cu (Fe)	2.4 km north of May Lake	05	cp, py, po	quartz-sillimanite-amphibole schist	7, 70, 100
459	Cu (Fe, Zn, Ag, Au)	Churchill Minerals Ltd.	05	cp, po, sp, assay: Au, Ag	sericite schist near granodiorite contact	7, 10, 13, 14, 15, 17, 23, 48, 75, 91, 102
460	Fe (Au, Cu)	Nisto (Musk), Sonya Lake Area	05	po, cp, assay: Au	near top of felsic pile in rhyolitic agglomerate, South zone	8, 17, 23, 34, 75, 91, 95, 100
461	Fe (Au, Cu)	Nisto (Musk), Sonya Lake Area	05	po, cp, assay: Au	at all stratigraphic levels in greywackes above the felsic volcanic unit	4, 8, 17, 23, 30, 49, 60, 75, 76, 91, 95, 129, 148, 198
462	Fe	mouth of Kenwood River	05	po, py	felsic metavolcanics	75, 76
463	-	Mad Claims, Mad Lakes area, west of south end, Macoun Lake	05	asb	black meta-pyroxenite	114
464	Fe	Kenwood River Mincor Concession	05	py, po	silicified volcanic rock	17, 23, 119, 120
465	Fe (Pb, Cu, Au)	Lower Nistoassini Lake	05	py, po, cp, gn, assay: Au	sheared volcanics, quartz vein	22
466	Zn (Fe)	west of Fleming Lake	05	sp	near sill of granitic rock in metasediments	100

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
467a	Zn (Fe, Cu, Ag, Ni, Co, Mo, Pb, Au)	May claims, northeast of Umpherville Lake	05	sp, py, po, cp, gn, assay: Au, Ag, Co, Ni	interbedded paragneisses, overlain by thin basic volcanic unit	63, 64, 65, 66, 67, 68, 70, 190
467b	Fe (Cu, Zn)	610 m south of Jones Lake	05	po, py, cp, mag, sp	metasediments	63, 64, 65, 66, 67, 68, 70, 190
468a	Zn (Fe, Cu, Ag, Pb, C)	2.3 km west of Key Lake	05	sp, py, cp, po	hornblende-biotite-quartz-feldspar gneiss	25, 87, 88, 89, 95, 181
468b	Zn (Fe, Cu, C)	2 km northeast of Key Lake	05	sp, po, py, cp, gf	biotite-hornblende gneiss, gabbro	24, 80, 81, 82, 88, 168
469	Zn (C, Fe, Cu)	1.6 km south-southeast of Key Lake	05	cp, gf, sp	biotite and garnetiferous gneisses hornblende-biotite gneiss (very low assays for Cu and Zn)	25, 81, 88, 89, 95, 181
470a	Zn (Fe, Cu, Ag, Au, Mo, Ni, U)	2 km north-northeast of Elephant Lake	05	sp, cp, po, py assay: Ni	quartz-biotite-hornblende gneiss	7, 8, 10, 13, 14, 15, 44, 102, 138, 177,
470b	Fe	4 km west of north end, Elephant Lake	05	po, py	quartz-biotite gneiss, calcareous gneiss	7, 8, 10, 13, 14, 15, 44, 102, 138, 177
471	Zn (Fe, C, Ag, Cu, Ni, Co)	east of Dougal Lake, southwest of Elephant Lake	05	sp, gf, assay: Ni, Cu, Fe, Ag, Co	massive graphite-quartz veins in quartzite and quartz-biotite schist	7, 10, 13, 14, 15, 176, 171, 178
472	Zn (Fe, Au, Cu, Ni)	west side, Greenhill Lake	05	sp, po, py, assay: Au, Cu, Ni	medium-grained granodiorite	7, 10, 13, 14, 15, 23, 57
473	Zn (Fe, Cu, Ni, Au)	Kenwood River	05	sp, py, assay: Cu, Ni, Au	dacite, quartz diorite, chlorite schist	58
474	Zn (Fe, C, Cu, Ag, Pb, Au, Ni)	Lower Nistoassini Lake	05	sp, cp, po, py, assay: Ni, Ag, Pb, Au	dacitic to andesitic volcanics, quartz-sericite-biotite schist	84, 85
475	Zn (Fe, Cu, Ni)	west of Lower Nistoassini Lake	05	sp, po, py, cp	andesite, tuff, rhyolite, dacite, feldspar porphyry, quartz biotite gneiss	58, 92, 93
476a	Au (Ag, Cu, Fe)	west of north end Henry Lake	06	Au, po, cp	quartz stringers in hornblende-rich gneiss	2, 7, 10, 86, 97, 123, 167
476b	Pb (Ag)	4 km northeast of south end Henry Lake	06	gn, assay: Ag	sheared quartz-biotite-hornblende gneiss and migmatite, pyroxenite	2, 7, 10, 86, 97, 123, 167
477	Cu (Fe)	south of Big Island, Reindeer Lake	06	cp, py	mylonite near Tabbernor Fault	103
478	Cu	northwest side of Deep Bay	06	bo, cp, cct	small carbonate stringers in hornblende-rich intrusive	103
479	Cu (Au, Fe)	north of Henry Lake	06	cp, py, po assay: Au	hornblende (quartz) gneisses	116
480	C (Fe, Cu, Ni, Fe, Ag, Zn, Co)	Deep Bay, Pollon Lake	06	gf, po, py, assay: Cu, Ni, Ag, Zn, Co	pelitic gneiss, calc-silicate gneiss, sulphide bands	98, 105, 136, 150, 168, 191

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
481	C (Fe, Cu)	west of Deep Bay	06	gf, po, py, cp	pelitic gneisses, quartzite and pegmatite; one of four graphitic zones is similar to the main zone on CBS 2016 (SMDI 480)	104, 136, 150
482	Mo	Numabin Bay area	06	mo	small pluton ultramafic rock in biotite gneisses	22
483	Pb (Ag, Fe, Cu, Au)	south end Cunning Lake	06	gn, py, po, cp, assay: Ag, Au	shear zones in migmatite	101, 127
484	Fe	Camp Lake, 4 km south of Cunning Lake	06	py, po	granitic gneiss intrusive into migmatized metasediments	13, 10, 103, 124, 125
485	Fe (Cu, Zn)	southeast bay, Stackhouse Bay, Reindeer Lake	06	py, po, mag, gf, assay: Cu Zn	quartz-biotite gneiss, quartz-feldspar-biotite gneiss	101, 117
486	Zn (Cu, Ni, Fe, Ag, Co)	east of Fleming Lake	06	sp, cp, po, py, assay: Ni, Co, Ag	metasediments, andesitic tuffs and volcanics	100, 169
487	Ag (C, Cu, Mo)	1.6 km north of northeast end of Finlayson Lake	07	gf, assay: Ag, Mo, Cu	quartz mica gneiss, mica graphite schist	159
488a	Cu (Ag, Au)	Gladman Lake area	07	cp, assay: Ag, Au	mineralization on 020° lineament, in breccia; Tabbernor Fault system	1, 10, 11
488b	Be	0.4 km north of north end of Gladman Lake	07	be	pegmatite(?) in granodiorite	1, 10, 11
489	C (Zn, Cu, Ag, Ni, Mo)	east of Deep Bay	07	gf, assay: Ni, Cu, Zn, Mo, Ag	biotite gneiss, biotite-graphite gneiss	136, 158, 191
490	Cu (Mo, Fe, C)	Kamuchawie Lake	08	cp, mo, py, gf	garnet-biotite gneiss, migmatite	10, 12
491	Cu (Ag)	Wapus Lake, south shore	08	cp, bo, Cu assay: Ag	fractures in biotite layers, in pegmatite	10
492	Mo (Cu, Zn, Fe)	Dumont Lake	08	mo, py, po, cp, bo, ma	gneissic metasediments	2, 17, 147, 179, 180
493	Fe (Zn)	north arm, Wapus Lake	08	po, py, assay: Zn	quartz-biotite gneiss	160
494	Fe (Cu, Zn, U)	east of Wapus Lake	08	po, py, cp, sp, ur	fractures in pegmatite sills	32
495	Cu (Ni, Fe)	northeast of Wapus Bay	09	cp, po, py	meta-gabbro, cutting biotite gneisses	29, 71, 73
496	Fe	Wapus Bay	09	hem	crystalline hematite along pegmatite dyke	47
497	Mo	Bleasdell Lake	09	mo	quartz vein in granitized calcareous rocks	29, 31, 51, 118
498	Mo (Fe)	west of Wapus Lake	09	mo, mag	granodiorite which intrudes metasediments	141

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
499	Fe	between Wilkins and Hillier Lakes	09	po, py	meta-gabbro in quartz diorite	141
500a	U	Bleasdell Lake	09	ur	biotite-hornblende segregations in pegmatite	31, 51, 118, 194
500b	Be (As, Cu, Fe, P)	Bleasdell Lake	09	be, asp, cp, po, ap	beryl- and apatite-bearing pegmatite cutting biotite gneiss	51
501	Au	west of Lawrence Bay, Reindeer Lake	10	asp	volcaniclastic, metavolcanic, minor metapelitic	116
502	Cu (Zn, Fe)	Lawrence Point, Reindeer Lake	10	cp, py, sp	shear zone in siliceous sediments	9, 17, 156, 182
503	Cu (Fe)	Lawrence Bay, Reindeer Lake	10	cp, po, py,	massive amphibolite	80
504	Cu (Fe, Zn, Au)	west shore, Reindeer Lake	10	cp, po, py assay: Zn, Au	garnet-actinolite-hornblende-feldspar gneiss	183
505	Cu (Zn, Fe)	Wapus Island, Reindeer Lake	10	cp, po, py, sp	metasediments near granitic intrusive bodies	145
506	Cu (Fe)	Milton Island, southwest shore, Reindeer Lake	10	cp, po, py	small disseminations of sulphides in quartz-diorite and quartz lenses, in metasedimentary schists, near intruding quartz diorite	185
507	Cu (Fe, U)	north side, Butler Island, Reindeer Lake	10	cp, po, py, uph	quartz diorite cutting schistose metasediments	111, 185
508	-	Lawrence Point, Reindeer Lake	10	asb	peridotite sill, with cross fibre asbestos veinlets	9, 17, 157, 183
509	-	west shore Lawrence Bay, Reindeer Lake	10	asb	thin zone near north edge of ultramafic unit	9, 17, 157, 18
510	Fe	Brenton Island, Reindeer Lake	10	po, py	quartz-feldspar-biotite-hornblende-graphite gneiss	183
511	Fe	Read Lake, Reindeer Lake	10	py	metavolcanic series	81, 183
512	Fe (C)	south of Gilbart Lake	10	po, py, mag, gf	hornblende-biotite granite gneiss or leucotonalite	39, 183
513	Au (As, Ag)	Reindeer Lake	11	asp, assay: Au, Ag	mafic and felsic metavolcanics	101, 117
514	Cu	606 m south of south shore, Stackhouse Bay, Reindeer Lake	11	cp	mafic and felsic metavolcanics	101, 117, 161
515	Cu (Ag, Co, Fe, Ni)	east of Numabin Bay, Reindeer Lake	11	cp, assay: Ag, Co, Fe, Ni	metasediments (quartz-biotite-hornblende-garnet gneisses)	161
516	Fe (Cu, Ni)	Birch Point, Reindeer Lake	11	cp, py, assay: Ni	fractures in basic intrusive lenses between hornblende gneiss and quartz-feldspar gneiss	129
517	Zn (Ag, Cu, Ni, Fe, C)	Ghana Lake area	11	sp, gf, po, py, assay: Ag, Cu, Ni, Fe	quartz-feldspar-biotite gneiss, conglomerate, intruded by pegmatite	162

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
518	Zn (Ag, Cu, Ni, Fe)	near Watt Island, Reindeer Lake	11	sp, po, py, cp, assay: Ag, Au, Ni, Zn	quartz-biotite-hornblende gneiss, garnet-quartz-biotite-hornblende gneiss	101, 117
519	Zn (Fe, Au, Ag, Cu, Ni)	Stackhouse Bay, Reindeer Lake	11	sp, asp, po, py, cp, assay: Au, Ag	quartz-biotite-hornblende gneiss	101, 161
520	U	near north end, Stackhouse Bay	11	assay: U_3O_8	radioactive pegmatite dyke	114
521	Cu (Fe, Ni, C)	southwest of Buss Lakes	12	po, py, gf, cp, assay: Cu, Ni, Ag, Fe	quartzite, quartz-hornblende-biotite gneiss, pegmatite, graphite gneiss	173
522	Fe (Cu, Ni, U)	northwest side, Macoun Lake	12	po, py, uph assay: Cu, Ni	granitic biotite gneiss with sulphide veinlets	26, 113, 174
523	Fe (C)	southeast side, Morris Lake	13	py, po, gf	metasediment and metavolcanics within white granodiorite	105
524	Cu (Fe)	south shore, Hetherington Lake	14	cp, py	fractures, in diabase, along contacts with country rock	182
525	Mo	Numabin Bay Reindeer Lake	14	mo	hornblende gneiss, in granitic gneisses	182
526	Fe (Cu)	Nokomis Lake	14	po, py, cp	metasedimentary gneisses, including calc-silicate gneiss and amphibolite	182
527	Fe	Numabin Bay	14	py	fractures in fine-grained diabase, in granitic to dioritic complex	126, 182
528	Ag (Fe, Co, Zn, Cu)	east of south end, Perry Lake	15	assay: Ag, Cu, Co, Zn; gf, po, py	migmatitic psammopelitic gneiss	163
529	Ag (Cu, Zn, Co, Au)	east shore, Perry Lake	15	gf, po, py, assay: Ag, Au, Cu, Zn, Co, Fe	migmatitic psammopelites	164, 165
530	Ag (Ni, Zn, Cu, Co)	south end, Perry Lake	15	po, py, cp, gf, assay: Ag Ni, Zn, Co	migmatitic psammopelites	164
531	Cu (Fe)	Priest Point, south of Amiskit Island, Reindeer Lake	15	cp, po, py	metasediments and metavolcanics, near contact with quartz diorite	17, 112, 185
532	Fe (Cu, Co, Ni)	northwest of Perry Lake	15	po, py, gf assay: Cu, Co, Ni	quartz-biotite-amphibole gneisses	166
533	Fe (C)	east of Crozier Lake	15	po, py, gf	quartz-biotite-hornblende feldspar gneisses with granite gneiss and pegmatite	36, 37
534	Cu (Fe, C, U)	northeast side of Laxdal Island, Reindeer Lake	16	cp, po, py, gf, hem, uph	close to contact between amphibolite and quartz-feldspar-biotite gneiss	112, 189
1785	Au (Cu)	Reindeer Lake	11	po, assay: Au, Cu	metavolcanics, mainly mafic	101, 117

SMDI No.	Elements Present	Name of Occurrence/ General Location	NTS 64D-	Minerals Present	Host Rock/ Structures and Remarks	Reference Numbers
1786	Cu	Reindeer Lake	11	assay: Cu	metavolcanics, mainly mafic	101, 117
1886	Cu	Brabant Lake	04	cp	biotitic gneiss	28
1967	Cu	Contact Lake area	04	cp	quartz-feldspar-hornblende-biotite gneiss	152
1968	Cu	May Lake northeast	05	cp	quartz-feldspar-hornblende-biotite gneiss	153, 175
2065	Au (Fe, Zn, Pb, As)	Twin Lakes zone	05	Au, py, po asp, mag	mixed facies iron formation	17, 40, 72, 78, 133
2192	Au (Fe)	Kidney Lake, at east end	04	Au, py	quartz and granite veins cutting felsic debris flow deposits adjacent to small granitic stock	78, 79

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